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Women's Changing Participation in the Labor Force

A World Perspective

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Research has rarely tested the proposition that women have lost more than men when low-income countries introduce minimum wage legislation and certain other labor market regulations that raise the cost of labor to firms compared with families. But such interventions in the labor market may slow women's transition from nonmarket and family work to employment by firms. And that may affect the rate and structure of economic growth.

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Women in Development

This paper describes how the composition of the labor force changes with economic development. It considers recent trends in women's labor force participation and the type of jobs held in various sectors as national per capita income increases.

What policies affect the relative competitiveness of families and firms — and the extent to which women work for one or the other? Women are more likely to work in the family or informal labor market if the labor costs to firms exceed the opportunity costs of female labor to family enterprises. Firms are at a relative disadvantage compared with families in the employment of less experienced and less skilled labor, presumably because their labor costs are affected by such regulations as minimum wage legislation, social insurance premiums, limits on firing, costs of monitoring productivity, and rules about severance pay. The minimum-wage two-sector model predicts that raising effective minimum wage levels would increase the share of families (or the uncovered sector) in the labor force.

There are statistically significant relationships between income per adult in a country and the share of wage earners in most sectors of the economy — particularly in manufacturing, commerce, services, transportation, and utilities. As real income per adult increases, the overall fraction of wage earners increases, except in the case of women's entry into wage employment in agriculture.

In Asia and Africa, an increase in the proportion of employment in firms within the major sectors accounts for most of the rapid growth in women's overall share of wage employment. In Latin America, however, growth in the proportion of firm employment has been slower than elsewhere, and share of women in wage employment has even fallen overall in several countries. This is consistent with the greater labor market distortions in these countries of Latin America during the 1960s and 1970s — which hindered more firm employment of lower paid workers. Latin American women were progressively less likely to enter the labor force in manufacturing, a sector that absorbs many women as wage workers in other regions.

Enforcement and coverage of minimum wage legislation are difficult to measure, but it appears that women (and to a lesser extent men) participate less in the overall labor force when minimum wages are higher as a proportion of GNP per adult.

It is not unreasonable to assume that women have lost more than men from market regulations and distortions, but little research has addressed this proposition. If it is true, however, these interventions in the labor market may be responsible for slowing women's transition from nonmarket and family work to firm employment. This in turn may affect the rate and structure of economic growth.

This paper is a product of the Women in Development Division, Population and Human Resources Department. Copies are available free from the World Bank, 1818 H Street NW, Washington DC 20433. Please contact Maria Abundo, room S9-125, extension 36820 (47 pages with tables).

Table of Contents

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Women's Changing Participation in the Labor Force: A World Perspective*

Women's economic activities are hard to compare precisely across countries and sometimes difficult even to compare within countries over time. Cultural variation in interpreting what is productive work compounded by differences in the statistical definition of who is in the labor force are responsible for much ambiguity in measurements of women's productive roles that straddle home and market economic activities. It is widely recognized that women's activities are changing rapidly in high income, technologically advanced, countries.[1] The diversity is even greater across low income countries in what women do, but there is little consensus on how these roles are changing today. This paper assesses patterns in women's labor force participation and the composition of this participation among wage earners, self-employed, and unpaid family workers.

The shift of the locus of employment in contemporary societies from family to firm is attributed to technological economies of scale in production and finance, and the capacity of firms to minimize transaction costs, particularly in such major sectors as manufacturing, construction, commerce and services.[2] For women, it is also hypothesized that obtaining a job for wages outside of the family contributes to women's control over the returns to their labor hence augments their relative power in the allocation of household economic resources.[3] This economic status of women relative to men may in turn be associated with specific consumption patterns, investments in the health and education of children, and declines in fertility.

Despite the limitations of international census and survey data, about sixty countries report labor force data by sex, for at least two points in time,

disaggregated by wage/self-employed/unpaid family workers, and by sector of economic activity. These data are the focus of this paper, though they clearly are not a representative sample of the world's population. The sectoral composition of employment, as well as the mix of firm and family based jobs, changes systematically with development.[4] This paper considers whether recent trends in women's labor force participation and the type of jobs held are explained by intersectoral shifts in the distribution of employment or by trends within these sectors.

The association between the distribution of employment by industry and job type and the rate of participation in the market labor force by women probably embodies relationships operating in both directions. Changes in the final demands for goods and services, due to increases in per capita income for example, may alter the mix of employment by industry with consequences on the fraction of jobs that women are likely to hold. Conversely, an increase in the rate of participation by women will depress wages in those industries that are peculiarly intensive users of female labor, lowering unit costs and encouraging expansion of output and of female employment in these sectors. No attempt is made here to identify statistically and separate the consequences of a shift in the demand or the supply schedule by specifying the variables that operate only on the supply of women wanting work, or only on the demand for goods produced more efficiently by women. The decompositions of labor force outcomes by industrial sector can be strictly interpreted, only if it is assumed that changes in demand occurring with economic growth are responsible for part of the variation in women's labor force participation patterns but that the causal effect in the opposite direction is relatively minor.

I. Basic Data and Methods

Labor Force Concepts and Job Type

Population censuses and household surveys frequently tabulate persons in the labor force by sex and by industry, as well as by "type of employment." This classification of job type refers to (1) wage and salary workers, (2) employers, self-employed or own account workers, (3) unpaid family workers, and (4) others. The category "others often includes unemployed and "not specified elsewhere" as well as a heterogeneous mixture of groups that differ from country to country, such as in some cases the armed forces. This "other" category is rarely more that ten percent of the labor force, and because it cannot generally be allocated by industry, it is excluded.

The fraction of a specific job type of "total" employment is thus defined as one job type over the sum of the first three job types, for example, the fraction of wage earners ($W_1 = (1)/(1 + 2 + 3)$) approximates the importance of firms as opposed to family based employment. Persons holding more than one type of job are allocated to their primary job, but in the case of agriculture those who cultivate their own, rented, or share-cropped land are categorized as self-employed, though they may also work for wages, possibly outside of the agricultural sector. Because individuals cannot allocate their time proportionally across types of jobs or across sectors, these traditional tabulations of labor force by primary attachment are potentially misleading.

There does not appear to be a commonly accepted definition of a worker. Consequently, from country to country the definition of "participating in gainful activity" varies, and has an effect on "measured" participation rates, particularly for women. Even within a country over time, definitions may be

modified with serious consequences for the number of persons enumerated in unpaid family work.[5] The need to adjust labor force statistics across countries and over time to reflect a common concept of gainful activity is widely recognized. This difficult task is not attempted here. Because of this measurement problem, separate analyses of the data for men and women are reported, and since the definition of male and female wage earners is subject to less ambiguity than other job types, comparisons of male and female wage earners across populations are also undertaken. Because more than 95 percent of men age 25 to 55 tend to be counted as being in the labor force, ambiguity is relatively minor for measuring male participation in these ages. But even for men when participation is averaged for all persons over age 15, the extent of schooling and differences in age composition can affect substantially aggregate participation, in a manner that has not yet been sufficiently studied by economists.

The distinction is also drawn between the "informal" and "formal" sector, but this means many things to different analysts and no satisfactory scheme of measurement has been proposed.[6] Some workers in small unregulated firms using traditional production technologies, and not benefiting from a formal contract, are said to belong to the "informal" sector, but they are unavoidably classified here as wage earners, or in the "modern sector," for lack of information on firm size, production technology, or type of labor contract. Most family and self-employed workers are plausibly assigned to the "informal" sector. The firm-family job type distinction analyzed here may therefore approximate the formal-informal sector dichotomy. The match, however, is anything exact.

Descriptive Statistics of Labor Force by Sector

Tabulations of the labor force by job type, sex, and eight industrial

sectors at two points in time were obtained for 75 countries, but only 61 are analyzed here that also have constant local price series on GNP.[7] These are listed in Appendix Table A-1. Table 1 reports for males and sample labor force weighted means and standard deviation of the sector's share of total employment (left panel) and the fraction of wage earners in a sector's employment (right panel). The weighted averages are also disaggregated by five regions of the world. It should be noted that sub-saharan Africa is represented by only one country, Cameroon, and therefore the African region is labeled "North Africa" as a reminder that the sample does not represent the entire continent . The initial and final year available for each country differ (Table A-1), but tend to span ten to thirty years from 1950 to 1982. Most of the male labor force is employed in four sectors, as seen from the left side of Table 1, namely, agriculture, manufacturing, commerce and services. As the fraction of male employment in agriculture drops from 62 to 14 percent between low and high income countries(Cols. 2 and 3), the fraction in manufacturing increases from 11 to 29, commerce from 7 to 16, and services from 12 to 20 percent.

Table 2 provides the same data for women. A similar decline in agriculture, but a smaller rise in manufacturing and larger gain in commerce and services across development groups is noted for women than for men. Fifty-four percent of employed men and 58 percent of the employed women are classified as wage or salary earners (right side of Tables 1 and 2). Contrasting the low and high income countries, agriculture has consistently the lowest fraction of wage earners, 25 to 29 percent for males and 30 to 14 percent for females, while the small sectors of mining and utilities contain primarily male wage earners, 88 to 97 and 94 to 99 percent, respectively, in low and high income countries. The sectors that evidence the largest <u>changes</u> in the fraction of wage earners

with development are commerce, that more than doubles from 23 or 31 percent for women and men in low income countries to 74 or 78 percent in high income countries, and manufacturing where the analogous increase is from 47 or 62, to 93 percent for both sexes. Intermediate increases are seen for construction, transportation, and services, from 70 to 90 percent wage earners.

With the exception of agriculture, the shift from family to firm employment is evident for both men and women. To determine whether men or women are disproportionately entering (or exiting) the labor force and then making this transition from family to firm employment, Table 3 summarizes by region the figures for this same sample of countries. First the population weighted averages are reported and then the annual rates of changes. Several patterns are notable. In the full labor force, women constitute about a third of the workers, but the fraction is declining by .67 percent per year in the low income countries, while increasing by .22 percent per year in the high income countries. Given the preponderance of populations in the South and West Asian countries in particular, the share of female workers in my entire sample (i.e. the world) is declining. It may be observed, however, that this fraction is nonetheless increasing in Latin America and East Asia at a substantial rate. Regional differences in the direction of change in women's labor force roles are evidently pronounced. It is not surprising, therefore, that there is no consensus on trends associated with development in women's labor force participation.

This decline can be traced in Table 3 more specifically to the decline in self-employed women in South and West Asia (-1.86 percent per year and a much more gradual decline in North Africa, plus a smaller reduction in women as a

Table 1

Distribution of Male Workers and Male Wage Earners by Sector and Region[a]

Sector of Employment:	Fraction of Male Workers Employed in Sector							Fraction of Male Workers Who Are Wage Earners						
	World	High[b] Income	Low[b] Income	Latin America	North Africa	East Asia	South & West Asia	World	High[b] Income	Low[b] Income	Latin America	North Africa	East Asia	South & West Asia
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Agriculture	.445	.138	.623	.477	.547	.627	.668	.255	.289	.250	.367	.377	.161	.242
	(.265)	(.112)	(.133)	(.127)	(.107)	(.147)	(.095)	(.117)	(.144)	(.111)	(.124)	(.172)	(.080)	(.081)
Mining	.011	.019	.006	.016	.008	.004	.006	.941	.9[illegible]	.882	.941	.969	.835	.857
	(.011)	(.013)	(.006)	(.013)	(.010)	(.003)	(.002)	(.075)	(.[illegible])	(.092)	(.063)	(.050)	(.170)	(.058)
Manufacture	.174	.286	.109	.164	.105	.082	.101	.808	.92[illegible]	.623	.825	.785	.702	.501
	(.098)	(.058)	(.042)	(.036)	(.029)	(.059)	(.019)	(.193)	(.059)	(.180)	(.082)	(.116)	(.135)	(.109)
Utilities	.008	.016	.004	.007	.006	.002	.004	.974	.991	.935	.943	.984	.962	.922
	(.007)	(.023)	(.032)	(.028)	(.047)	(.021)	(.026)	(.116)	(.062)	(.160)	(.093)	(.097)	(.123)	(.189)
Construction	.061	.110	.033	.068	.053	.031	.023	.805	.837	.742	.774	.839	.826	.666
	(.047)	(.023)	(.032)	(.028)	(.047)	(.021)	(.026)	(.116)	(.062)	(.160)	(.093)	(.097)	(.123)	(.189)
Commerce	.103	.155	.071	.091	.082	.092	.061	.543	.735	.305	.483	.343	.234	.256
	(.051)	(.041)	(.027)	(.026)	(.014)	(.035)	(.017)	(.254)	(.139)	(.135)	(.089)	(.071)	(.134)	(.077)
Transaportation	051	.078	.035	.050	.044	.038	.029	.831	.925	.708	.718	.818	..704	.692
	(.026)	(.012)	(.016)	(.015)	(.015)	(.020)	(.011)	(.131)	(.048)	(.100)	(.091)	(.052)	(.119)	(.091)
Services	.149	.201	.118	.137	.155	.123	.109	.816	.872	.759	.758	.902	.855	.714
	(.063)	(.061)	(.040)	(.058)	(.026)	(.031)	(.032)	(.107)	(.031)	(.123)	(.115)	(.046)	(.053)	(.119)
NonAgriculture	.555	.8[illegible]	.377	.523	.453	.373	.332	.767	.870	.630	.734	.760	.651	.564
	(.265)	(.1[illegible]	(.133)	(.127)	(.107)	(.147)	(.095)	(.146)	(.054)	(.114)	(.044)	(.056)	(.083)	(.099)
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00	.539	.790	.393	.559	.551	.344	.349
								(.228)	(.113)	(.130)	(.101)	(.150)	(.118)	(.084)
Particpation rate[c]	.823	.754	.877	.834	.786	.831	.919							
	(.105)	(.080)	(.090)	(.091)	(.148)	(.067)	(.062)							
Number of Countries	61	22	39	17	6	6	10	61	22	39	17	6	6	10
Employment Weight (in percent)	100	37	36	11	3	11	39	100	37	36	11	3	11	39

[a] Country means are weighted by male employment in sector or economy, and weighted standard deviation is reported in parentheses beneath mean.
[b] High income countries are synonymous with the "West" category in Table A-1 and includes Japan, Western Europe, Canada, USA, Australia and New Zealand, and low income countries include the remainder. See Table A-1 for a list including the regional breakdown of the "low income" countries.
[c] Male labor force participants to males age 15 or more.

Table 2

Distribution of Female Workers and Female Wage Earners by Sector and Region[a]

Sector of Employment:	Fraction of Female Workers Employed in Sector							Fraction of Female Workers Who Are Wage Earners						
	World	High[b] Income	Low[b] Income	Latin America	North Africa	East Asia	South & West Asia	World	High[b] Income	Low[b] Income	Latin America	North Africa	East Asia	South & West Asia
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Agriculture	.404	.121	.663	.205	.673	.606	.821	.275	.138	.297	.297	.075	.195	.344
	(.345)	(.149)	(.258)	(.158)	(.313)	(.166)	(.113)	(.211)	(.174)	(.207)	(.237)	(.167)	(.149)	(.207)
Mining	.003	.003	.002	.004	.001	.001	.003	.875	.966	.758	.831	.925	.535	.773
	(.003)	(.004)	(.004)	(.002)	(.003)	(.000)	(.001)	(.139)	(.023)	(.137)	(.164)	(.145)	(.222)	(.047)
Manufacture	.158	.219	.103	.177	.076	.109	.080	.771	.925	.471	.723	.486	.532	.268
	(.088)	(.056)	(.075)	(.065)	(.112)	(.076)	(.059)	(.276)	(.077)	(.276)	(.200)	(.285)	(.240)	(.170)
Utilities	.003	.004	.001	.003	.002	.000	.002	.914	.995	.696	.946	.971	.918	.587
	(.002)	(.002)	(.002)	(.003)	(.003)	(.001)	(.001)	(.171)	(.005)	(.207)	(.062)	(.133)	(.159)	(.134)
Construction	.008	.013	.004	.005	.003	.003	.004	.808	.838	.716	.900	.883	.877	.595
	(.007)	(.008)	(.003)	(.003)	(.005)	(.003)	(.003)	(.133)	(.095)	(.179)	(.092)	(.162)	(.078)	(.117)
Commerce	.143	.218	.074	.128	.038	.158	.016	.627	.775	.231	.501	.342	.129	.155
	(.095)	(.043)	(.077)	(.062)	(.021)	(.054)	(.013)	(.307)	(.175)	(.223)	(.206)	(.243)	(.116)	(.183)
Transaportation	.016	.029	.004	.011	.007	.003	.003	.952	.968	.850	.943	.963	.881	.715
	(.014)	(.008)	(.006)	(.004)	(.010)	(.006)	(.003)	(.074)	(.026)	(.153)	(.074)	(.037)	(.136)	(.136)
Services	.265	.393	.148	.469	.200	.116	.072	.883	.927	.773	.824	.965	.811	.624
	(.190)	(.123)	(.162)	(.142)	(.222)	(.069)	(.059)	(.127)	(.056)	(.174)	(.084)	(.040)	(.098)	(.249)
NonAgriculture	.596	.879	.337	.795	.327	.391	.179	.793	.889	.561	.752	.780	.458	.427
	(.345)	(.149)	(.258)	(.158)	(.313)	(.166)	(.113)	(.207)	(.088)	(.232)	(.109)	(.198)	(.169)	(.208)
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00	.583	.799	.385	.658	.306	.298	.359
								(.288)	(.186)	(.213)	(.167)	(.342)	(.142)	(.188)
Particpation rate[c]	.349	.377	.326	.247	.124	.452	.328							
	(.135)	(.089)	(.158)	(.083)	(.143)	(.146)	(.145)							
Number of Countries	61	22	39	17	6	6	10	61	22	39	17	6	6	10
Employment Weight (in percent)	100	37	36	11	3	11	39	100	37	36	11	3	11	39

[a] Country means are weighted by female employemnt in sector or economy, and weighted standard deviation is reported in parentheses beneath mean.
[b] High income countries are synonymous with the "West category in Table A-1 and includes Japan, Western Europe, Canada, USA, Australia and New Zealand, and low income countries include the remainder. See Table A-1 for a list including the regional breakdown of the "low income" countries.
[c] Female labor force participants to females age 15 or more.

fraction of family unpaid workers in North Africa. Although this decline in the fraction of women is family employment is large in the population weighted it may be partly a result of spurious changes in the definition of the labor force between in the Indian censuses of 1961 and 1971. However, similar declines are evident in Pakistan from 1961 to 1971, and in Bangladesh from 1961 to 1974, except in wage employment. It has also been argued that the 1961 Indian and Pakistan Censuses modified traditional labor force definitions with a resulting upward shift in the reported level of economic activity for both women and men, compared with either 1951 or 1971.[8] This patterns of decreasing labor force activity rates by women in South and West Asia, that is apparent at least through the early 1970s, has not been extensively analyzed. It may be due to the sluggish overall growth of the region except for oil-exporters, or to the lower levels of school enrollment among women than men that placed women in the region at a disadvantage relative to men in market employment.

Disaggregating by sector the female fraction of the labor force and the female fraction of wage earners in Table 4 provides further evidence of the contrary trends in women's participation by region. Even among wage earners, the fraction of women in manufacturing is low in North Africa and both portions of Asia, for in these regions women in manufacturing are mostly self-employed or family unpaid workers, presumably in home-based craft production. In commerce (i.e. wholesale and retail trade) women are a smaller fraction of wage earners in Asia than they are of the total labor force, because (particularly in East Asia) women are frequently traders and shopkeepers. Women constitute two-thirds of the family workers and half of the self-employed working in commerce in Asia. The roles of women in agriculture are heterogeneous across regions of the world and agriculture is the dominant sector in the largest and poorest nations.[9]

Women represent a third of the total agricultural labor force in high income countries and somewhat smaller fraction in low income regions. But among wage earners in agriculture, women are a larger share in the less developed countries than in the high income countries. In the delivery of services, women are a majority of the work force in developed countries but only a third in the low income countries. In Latin America women are also a majority of service workers, whereas the proportion is much lower in North Africa and South and West Asia. The shift in the composition of production and employment out of the agriculture and into manufacturing and services is thus associated with opportunities for women's employment to expand relative to men's, particularly as wage earners.

Decomposition of Changes in Labor Force Status

Two indicators of women's position in the labor force emerge from these tabulations: (1) the fraction of a certain type (i) of job occupied by women, T_i, which is a measure of women's employment status relative to men, and (2) the fraction of women workers who have a specific type of job, W_i, or the relative composition of women's jobs. To relate changes in these aggregate indicators of the labor market to changes in the sectoral composition of employment that parallel the development process a simple decomposition is exploited. For example, the national fraction of women workers who are in the first category of jobs, i.e. wage earners, $W_{1.}$, is defined as the sum of worker-weighted sector-specific (j) proportion of women workers who are wage earners:

$$W_{1.} = \sum_j W_{1j} n_j,$$

Table 3

The Proportion of the Labor Force and Type of Employment that is Female and Annual Rates of Change, by Region

	Women as a Fraction of Job Category							
	Labor Force		Wage Earners		Unpaid Family Workers		Self Employed	
	Mean	Rate of Change	Mean	Rate of Change	Mean	Rate of Change	Mean	Rate of Change
World	.31	-.31	.32	.13	.57	.09	.21	-1.02
High Income	.36	.22	.36	.35	.68	.03	.19	.18
Low Income	.27	-.67	.26	-.20	.53	.13	.22	-1.28
Latin America	.24	.30	.27	.29	.31	.26	.16	.26
North Africa	.14	-.13	.09	.09	.31	-.22	.17	-.34
East Asia	.37	.29	.34	.21	.60	.22	.24	.42
South and West Asia	.25	-1.21	.26	-.52	.51	-.02	.22	-1.86

Sources: See sample composition Table A-1 and special adjustments and data sources in Data Appendix.

Table 4

The Fraction of Women in the Labor Force and Among Wage Earners, by Sector and Region[a]

Sector of Employment:	Fraction of Females in Labor Force							Fraction of Females Among Wage Earners						
	World	High[b] Income	Low[b] Income	Latin America	North Africa	East Asia	South & West Asia	World	High[b] Income	Low[b] Income	Latin America	North Africa	East Asia	South & West Asia
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Agriculture	.290	.327	.284	.118	.171	.362	.295	.301	.189	.315	.098	.040	.406	.365
	(.132)	(.162)	(.126)	(.091)	(.187)	(.094)	(.103)	(.138)	(.112)	(.134)	(.056)	(.031)	(.088)	(.069)
Mining	.088	.076	.111	.076	.024	.102	.136	.082	.075	.097	.068	.023	.068	.124
	(.061)	(.053)	(.068)	(.072)	(.013)	(.060)	(.056)	(.057)	(.053)	(.060)	(.051)	(.014)	(.047)	(.054)
Manufacture	.283	.298	.258	.251	.109	.439	.208	.273	.297	.207	.227	.071	.372	.124
	(.081)	(.041)	(.117)	(.057)	(.124)	(.070)	(.079)	(.076)	(.037)	(.109)	(.051)	(.057)	(.055)	(.051)
Utilities	.126	.131	.115	.116	.047	.085	.129	.119	.131	.008	.116	.046	.081	.086
	(.062)	(.038)	(.096)	(.058)	(.027)	(.027)	(.111)	(.058)	(.038)	(.067)	(.061)	(.027)	(.027)	(.074)
Construction	.056	.062	.042	.023	.010	.051	.063	.056	.062	.040	.026	.011	.054	.055
	(.039)	(.036)	(.041)	(.017)	(.006)	(.039)	(.048)	(.039)	(.035)	(.041)	(.017)	(.007)	(.045)	(.051)
Commerce	.379	.438	.279	.304	.072	.050	.082	.048	.451	.221	.311	.072	.355	.049
	(.154)	(.068)	(.201)	(.124)	(.060)	(.082)	(.057)	(.128)	(.072)	(.152)	(.072)	(.021)	(.083)	(.063)
Transaportation	.123	.172	.043	.064	.026	.048	.031	.137	.179	.051	.084	.030	.059	.032
	(.081)	(.061)	(.031)	(.021)	(.012)	(.046)	(.019)	(.082)	(.061)	(.041)	(.032)	(.013)	(.057)	(.025)
Services	.439	.520	.318	.515	.178	.355	.182	.456	.53[illegible]	.318	.536	.187	.343	.159
	(.149)	(.061)	(.159)	(.049)	(.044)	(.098)	(.058)	(.159)	(.067)	(.178)	(.062)	(.048)	(.108)	(.065)
NonAgriculture	.316	.361	.249	.320	.108	.380	.154	.324	.366	.225	.326	.11	.301	.108
	(.098)	(.056)	(.113)	(.046)	(.035)	(.055)	(.050)	(.101)	(.059)	(.109)	(.043)	(.021)	(.060)	(.042)
Total	.306	.356	.249	.320	.108	.380	.154	.324	.366	.225	.326	.111	.301	.118
	(.098)	(.056)	(.113)	(.046)	(.035)	(.055)	(.050)	(.101)	(.059)	(.109)	(.043)	(.021)	(.060)	(.042)
Number of Countries	61	22	39	17	6	6	10	61	22	39	17	6	6	10
Employment Weight (in percent)	100	37	36	11	3	11	39	100	37	36	11	3	11	39

[a] Country means are weighted by female employemnt in sector or economy, and weighted standard deviation is reported in parentheses beneath mean.
[b] High income countries are synonymous with the "West category in Table A-1 and includes Japan, Western Europe, Canada, USA, Australia and New Zealand, and low income countries include the remainder. See Table A-1 for a list including the regional breakdown of the "low income" countries.

and change in this national employment indicator can be decomposed into three parts, according to the sectoral disaggregation:

$$\Delta W_{1.} = \sum_j n_j \Delta W_{1j} + \sum_j W_{1j} \Delta n_j + \sum_j \Delta n_j \Delta W_{1j}$$

where W_{1j} is the fraction of women in sector j who are wage earners, n_j is the proportion of women workers in sector j, and Δ denotes change over a specified period. The first component of (1) is the intrasectoral change in the share of wage earners, assuming the initial relative employment distribution of women among sectors, n_j, does not change. The second component is the intersectoral change due to shifts in the relative distribution of women's employment among sectors, assuming no change in within sector fractions of wage earners. The third or residual interaction term captures the covariation in the change in relative size of sectors and change in their fractions of wage earners.

This form of decomposition is useful if the three identified sources of change have meaning in terms of the origin of the change or its economic and social consequences. In the case at hand, the standard definition of industrial sectors relates to different kinds of outputs, and development entails a shift in output and employment from agriculture to industry (manufacturing/mining/utilities/construction/transportation) and to services (commerce, business, governmental and personal services).[10] A major source of structural change caused by economic development arises from this form of intersectoral shift of production activity and employment, and is linked to the second component in the above decomposition. Sectoral shifts in output can be driven by sectoral differences in either factor productivities (technology), which affect the relative price of sectoral output (Gershenkron effects), or

income elasticities of consumer demand (tastes) for the output of various sectors, which change the mix of final goods domestically demanded (Engel effects). Income effects on the composition of demand are moderated and price effects are augmented if the domestic economy is open to international trade and a sector's output (and input) is tradeable and specialization occurs.

Intrasectoral change in the mix of wage and family employment, or the first component in the decomposition, depends on change in organization and technology that makes it more or less efficient for firms to produce a given output than for families or self-employed individuals. At the high level of aggregation considered here (2 digit industries), firms and families in the same sector may well produce quite different commodities. Shifts in the composition of output within a sector that are not observed in my data could thus explain an increase in W_{ij}, just as intersectoral shifts in proportions of employment at the national level can explain the increase in $W_{i.}$. Technical change may contribute to an increase in the optimal (unit-cost minimizing) scale of production. Available data, however, distinguish only the threshold between a family-sized enterprise and small-firm, not employment by various size classes of firms. The exception to such scale economies appears to be agriculture, where modernization in high income countries leads to a consolidation of land and increasing capital intensity, without requiring the replacement of the nuclear family as the labor/management unit. In most other sectors it is anticipated that development leads to increasing reliance on units of production that are of larger scale than the family. How much larger is not a question that these data can address.

Estimating Determinants of Component Changes

The above outlined decomposition of changes in indicators of labor force

status provides information on whether intersectoral shifts in jobs or intrasectoral changes in job types are responsible for current movements in the labor market position of women. A second phase of the analysis is to account for these inter (Δn_j) and intra (ΔW_{1j}) sectoral changes in the labor market. Initially only income per adult, an index of economic development, is treated as the determinant of these sector and job composition changes. the data are again national and represent a panel of cross sections. The same relationship can be estimated from between country variation (i.e. the cross section) or from the within country variation (i.e., time series).[11]

$$W_{1kt} = \alpha_0 + \alpha_1 \ln Y_{kt} + \mu_k + e_{kt} \qquad (2)$$

where $\ln Y_{kt}$ is the natural logarithm of real GNP in the kth country at time t per potential worker age 15 to 64[12], μ_k is a country specific fixed-effect embodying omitted time invariant explanatory factors, and e_{kt} an error that is serially uncorrelated.

Changes over time within countries are analyzed in the same framework by first differencing within countries:

$$\Delta W_{1kt} = (W_{1kt} - W_{1kt-n})/n = \alpha_1(\ln Y_{kt} - \ln W_{kt-n})/n + (e_{kt}-e_{kt-n})/n \qquad (3)$$

where n is the longest postwar interval for which the required data is available for each country.[13] The same methods are used to analyze cross sectional and time series variation in n_j to account for intersectoral changes in the relative distribution of employment that is associated with growth in income. More suitable nonlinear models for these dependent variables, W_{1j} and n_j, that are

limited to the unit interval, such as the logistic and fixed- effect logit specification for within country estimates, did not change qualitatively any of the conclusions reported later, and they do not conform to the linear decomposition of changes outlined earlier.[14]

Kuznets, among others, compared differences in economic structure <u>across</u> countries at different stages of economic development with the analogous differences that occur <u>within</u> countries as they develop.[15] The analysis outlined here is therefore undertaken for the same reason. Within country comparisons are for many purposes better designed, because they implicitly hold constant for any time-invariant country-specific omitted variables (μ_k). On the other hand, they tend to be less precise, because only short intervals in the development process are observed and short run fluctuations, disequilibria, and errors in measurement are thus more likely to mask long run equilibrium tendencies.

II. Evidence of Changes in Labor Force Status

Wage earners as a proportion of all male employed workers increased in this population weighted sample by .69 percent per year. The fraction of wage earners among female workers increased twice as rapidly, by 1.51 percent per year. Although the fraction of wage earners increased on average, it fell in a number of countries, many of which are in Latin America. Countries that experienced no growth in the fraction of wage earners tended to grow slowly (Cf. Table A-1). the exceptions are frequently countries with effective minimum wage legislation. The redeployment of workers from families to firms thus appears to be associated with the success of the economy to grow and the lack of minimum wage legislation that increases differentially the cost of labor to firms.

Sectoral decompositions of the change in the share of wage earners for men and women are reported in Tables 5 and 6, first on the basis of two-way

partition of the labor force into agricultural and nonagricultural workers, and then according to an eight-way partition that subdivides nonagriculture into mining manufacturing, utilities, construction, commerce (wholesale and retail trade), transportation, and services. Because the fraction of wage earners is generally lower in agriculture than elsewhere in the economy, and the nonagricultural share of employment increases with development, this intersectoral shift of employment helps to explain about a third of the entire sample's growth in the male fraction of wage earners in the labor force as reported in the first row of Table 5. Among female workers the intersectoral shift of employment out of agriculture accounts in Table 6 for only a sixth of the more rapid advance of females into wage employment. The residual interaction is relatively unimportant in the world total decompositions, accounting for two percent.

When nonagricultural employment is divided into seven subsectors (lower panel), the sources of the change in the male or female fraction of wage earners do not change appreciably. The agricultural-nonagricultural distinction is apparently of paramount importance for intersectoral shifts. Intrasectoral increases in the fraction of wage earner within sectors is the dominant explanation for the change in the employment mix between family and firm, in the aggregate sample, particularly for women.

Tables 5 and 6 also report these decompositions within regions (se again Appendix Table A-1 for regional groupings). East Asia evidences the most rapid growth in the fraction of male wage earners, .88 percent per year, almost twice that recorded in the high income economies. South and West Asia report the most rapid increases in the fraction of female wage earners, of 2.75 percent per year, but this is largely due to the abrupt decline in self-employed women and not due

to an absolute gain in female wage employment (Table 3). Latin America exhibits the slowest increase for the fraction of women in wage employment of .23 percent per year. Yet women are increasing their labor force participation rapidly in this continent where they have nearly gained parity with males in terms of education (Table 3), but appear to be deflected from firm employment, possibly by pervasive minimum wage legislation. The growth in the fraction of female wage earners is moderately rapid in the high income market economies, .79 percent per year. The disparities among regions in the rate of absorption of women into wage employments are larger than for men.[16] Interpretations of employment patterns among women might be facilitated if it were possible to analyze simultaneously female overall labor force participation rates and disentangle changes in the definition of economic activity that sometimes lie behind changes in women's family and self-employment activities.[17] Because of these limitations in the measurement of changes in the fraction of female workers who hold wage employment, our focus shifts to the share of women (relative to men) in the total labor force, and, more specifically, the women's share of all wage earners or firm employees. Decompositions based on these later indicators of women's status relative to men are shown in Tables 7 and 8.

Half of the widely noted increase in women's share of the labor force (Table 7) in high income countries is accounted for by the redistribution of employment across the eight distinguished sectors (i.e. 47%), though the shift out of agriculture is no longer quantitatively important (top panel). In Latin America the intersectoral change in jobs accounts for an even larger part of the growth in women's proportion of the labor force, but in this case most is due to the relative movement of production and employment out of agriculture (51 out of 87%). At the other extreme in East Asia, where the women's proportion of the

labor force has grown somewhat more rapidly than in Latin America, this advance is fully explained by within sector gains in the fraction of women in the labor force. In North Africa and South and West Asia, where women are a decreasing fraction of the labor force, intersectoral shifts in employment are relatively unimportant. The declines in women's participation are widely distributed across sectors, either because there has been a widespread displacement of women from the work force, or the redrawing more narrowly of the definition of the labor force in censuses after 1961 has reduced the enumeration of women in informal and family production activities.

Table 8 therefore repeats the decomposition analysis based only on the fraction of wage earners who are women. This indicator of women's participation should be less affected by changes int he definition of gainful economic activity within the family. The wage earner data suggest, nonetheless, that the entire gain in women's status in firm employment can still be traced to the changing sectoral composition of wage employment in Latin America. In East Asia and Africa, the increase in the fraction of wage earners who are women is attributable to advances in this fraction within sectors, and is not linked to changes in the sectoral composition of employment. Thus, even when family employments are excluded, women in South and West Asia are still losing ground in terms of their fraction of wage employment, and this is not attributable to changes in the composition of employment in this region, or more accurately the lack of it.

Table 5

Decomposition of Change Over Time in the Fraction of Wage Workers Among Male Employed Workers, Within and Between Sectors, by Region

Class of Countries	Sectors Analyzed	Average Fraction of Wage Earners (in percent)	Total Change Per Year	Sample Size (# of Countries)	Percent of Change due to:[c] Intrasector Change	Intersector Change	Residual Interaction
	Agriculture Nonagriclulture[a]						
World (Entire Sample)		53.9	.69	61	64	35	2
High Income		79.1	.54	22	40	61	-1
Latin America		55.9	.41	17	32	75	-7
Africa		55.1	.68	6	53	36	11
East Asia		34.4	.88	6	56	40	3
South & West Asia		35.0	.85	10	84	13	3
	All 8 Sectors[b]						
World (Entire Sample)		53.9	.69	61	65	33	2
High Income		79.1	.54	22	42	56	1
Latin America		55.9	.41	17	36	71	-7
Africa		55.1	.68	6	59	35	6
East Asia		34.4	.88	6	49	43	8
South & West Asia		35.0	.85	10	84	14	2

[a]Agriculture includes forestry and fishing.

[b]Nonagriculture divided into the following ISIC categories: Mining; manufacturing; electricity, gas, and utilities; construction; wholesale and retail trade; transportation; business and personal services.

[c]Percent of changes due to the three components may not precisely sum to one because of rounding. The change in workers in wage employments is summed across countries before total changes in the share of wage earners are calculated and decomposed for the sample and for the regional aggregations of countries.

See Appendix Table A-1 for composition of sample.

Table 6

Decomposition of Change Over Time in the Fraction of Wage Workers Among Female Employed Workers, Within and Between Sectors, by Region

Class of Countries	Sectors Analyzed	Average Fraction of Wage Earners (in percent)	Total Change Per Year	Sample Size (# of Countries)	Percent of Change due to:[c] Intrasector Change	Intersector Change	Residual Interaction
	Agriculture Nonagriclulture[a]						
World (Entire Sample)		62.7	1.51	61	82	17	2
High Income		79.9	.79	22	39	58	3
Latin America		65.9	.23	17	-28	107	20
Africa		30.6	.87	6	57	66	-22
East Asia		29.4	.61	6	77	17	5
South & West Asia		36.0	2.75	10	97	2	1
	All 8 Sectors[b]						
World (Entire Sample)		62.7	1.51	61	82	17	2
High Income		79.9	.79	22	39	59	2
Latin America		65.9	.23	17	-2	87	14
Africa		30.6	.87	6	55	57	-12
East Asia		29.4	.61	6	82	14	4
South & West Asia		36.0	2.75	10	96	3	1

[a]Agriculture includes forestry and fishing.

[b]Nonagriculture divided into the following ISIC categories: Mining; manufacturing; electricity, gas, and utilities; construction; wholesale and retail trade; transportation; business and personal services.

[c]Percent of changes due to the three components may not precisely sum to one because of rounding. The change in workers in wage employments is summed across countries before total changes in the share of wage earners are calculated and decomposed for the sample and for the regional aggregations of countries.

See Appendix Table A-1 for composition of sample.

Table 7

Decomposition of Change Over Time in Women's Fraction of the Labor Force, Within and Between Sectors, by Region

Sectors and Region of Countries	Women as a Fraction of Labor Force	Average Rate of Change in Fraction (%)	Percent of Change due to:[c] Intrasector Change	Intersector Change	Residual Interaction
Agricultural/Nonagriclultural Sectors[a]					
World Sample	.31	-.31	102	4	-6
High Income	.36	.22	95	-7	12
Latin America	.24	.30	34	51	14
Africa	.14	-.13	147	7	-54
East Asia	.37	.29	97	5	-2
South & West Asia	.25	-1.21	96	5	-1
Agriculture and Seven Other Sectors[b]					
World Sample	.31	-.31	115	-12	-5
High Income	.36	.22	46	47	7
Latin America	.24	.30	8	87	5
Africa	.14	-.13	123	29	-52
East Asia	.37	.29	96	2	2
South & West Asia	.25	-1.21	95	6	-2

[a]Agriculture includes forestry and fishing.

[b]Nonagriculture divided into the following ISIC categories: Mining; manufacturing; electricity, gas, and utilities; construction; wholesale and retail trade; transportation; business and personal services.

[c]Percent of changes due to the three components may not precisely sum to one because of rounding. The change in workers in wage employments is summed across countries before total changes in the share of wage earners are calculated and decomposed for the sample and for the regional aggregations of countries.

See Appendix Table A-1 for composition of sample.

Table 8

Decomposition of Change Over Time in Women's Fraction of the Wage Employment, Within and Between Sectors, by Region

Sectors and Region of Countries	Women as a Fraction of Labor Force	Average Rate of Change in Fraction (%)	Percent of Change due to:[c] Intrasector Change	Intersector Change	Residual Interaction
Agricultural/Nonagriclultural Sectors[a]					
World Sample	.32	.13	71	31	-2
High Income	.36	.35	94	6	-0
Latin America	.27	.29	45	42	13
Africa	.09	.09	17	81	2
East Asia	.34	.21	107	-5	-1
South & West Asia	.26	-.52	109	-13	4
Agriculture and Seven Other Sectors[b]					
World Sample	.32	.13	-11	119	-8
High Income	.36	.35	48	54	-2
Latin America	.27	.29	-9	111	-2
Africa	.09	.09	97	23	-21
East Asia	.34	.21	114	-5	-9
South & West Asia	.26	-.52	109	-12	3

[a]Agriculture includes forestry and fishing.

[b]Nonagriculture divided into the following ISIC categories: Mining; manufacturing; electricity, gas, and utilities; construction; wholesale and retail trade; transportation; business and personal services.

[c]Percent of changes due to the three components may not precisely sum to one because of rounding. The change in workers in wage employments is summed across countries before total changes in the share of wage earners are calculated and decomposed for the sample and for the regional aggregations of countries.

See Appendix Table A-1 for composition of sample.

Decomposing observed changes in women's participation in the labor force implies that the changing sectoral distribution of employment that is broadly consistent with development has tended to increase women's fraction of wage employment in Latin America and also in the group of High Income Countries. Similar advances made by women in the labor force in East Asia are not attributable to such changes in the sectoral composition of employment. Nor has the slow progress of women in North Africa, from a very small fraction of the wage labor force, been assisted by changes in the changing composition of African employment. Development-related changes in the sectoral composition of jobs is not a major factor in the loss of women's portion of wage employment in South and West Asia. Decompositions of changes in the fraction of women in self-employed jobs or unpaid family work (not reported) confirm that where women are moving ahead relative to men in wage employment, they are also increasing their relative position in family jobs, such as in Latin America and East Asia. Conversely, the female fractions of self-employed and family unpaid workers are declining broadly within most sectors in South and West Asia. The patterns observed by region in women's labor force participation do not appear localized to a few sectors or concentrated in certain types of jobs (Tables 3 and 4).

III. Evidence of within Sector Variation in the Share of Wage Earners and the Distribution of Employment with Development

Because increases in the fraction of all women in wage employment within the various sectors account for virtually all the progress women have made in this direction in Africa and Asia, analysis within specific sectors may clarify the origins of the limitations on women's entry into firm employment. Analysis thus examines first between-country and then within-country variation in W_{ij}, the

fraction of women in wage employment in sector j, and only then analyzes the parallel variation in sectoral distribution of employment, n_j. Discussion is focused on women in the four largest sectors--agriculture, manufacturing, commerce and services--though comparisons are required with males to place in perspective how technologies and trade may have influenced the changing balance of firm and family employment for both sexes within and between sectors.

The Fraction of Wage Earners by Sector

Table 9 reports weighted ordinary least squares estimates for each sector based on (1) the pooled initial and final year cross sections of 61 countries, and (2) the annual rates of change over the observed interval within countries. In the cross section the fraction of male wage earners in agriculture increases with income but decreases for women. Within countries, the rate of increase in income over time in percent is associated with an increase in the male and female fractions of wage earners in agriculture of .14 and .28 percentage points, respectively. The growth in the male and female fraction of wage earners in services also increases more rapidly with income within countries than it does across countries; a one percent income gain is associated within countries with a .12 percentage point increase in services for both men and women, whereas the cross section suggests only a .04 and .08 percentage point gain. Manufacturing and commerce exhibit the opposite tendency for the cross sectional income associations to exceed that for time series, .13 and .17 for men and .19 and .22 for women, versus .11 and .12 for men over time, and much slower for women, .04. and .13 percentage points. Thus, cross sectional patterns underestimate the rate at which the fraction of wage earners has increased over time with development in agriculture and services, but overestimate its change in the composition of

employment in manufacturing and commerce. This difference by sector could be related to regulations and public policy that have increased wages and labor costs for firms in manufacturing and commerce, but are more difficult to enforce on firms in agriculture and services.

For the economy as a whole, a one percent annual rate of growth in real income per adult is associated with about the same increase in the share of wage earners for men and for women, .15 and .16, respectively. The observed changes within countries were only slightly larger for men, .19 percentage points, but substantially larger for women, .27 percentage points. Women have thus entered wage employments more rapidly over all than would have been anticipated on the basis of the cross country association by income level.

Other recent developments may have contributed to the more rapid entry of women into the wage labor force in more rapidly developing countries, such as the leading role of manufactures in expanding international trade and the forces that led to the sharp decline in fertility in Latin America and East Asia.[18]

The Distribution of Employment by Sector

Table 10 reports regressions where the fraction of the labor force employed in each sector, n_i, is the dependent variable. The intersectoral shift of workers out of agriculture (or the converse entrance into nonagriculture is virtually identical in the cross section or within countries over time. A one percent increase in income is associated with a decline in .18 percentage points in the male agricultural share of the labor force and about a .20 percentage point decline in female. The cross sectional pattern in employment shares is a less adequate predictor of within country changes in manufacturing, which relatively gained workers more slowly within countries than one would have

Table 9

Regressions of the Fraction of Wage Earners on Income:
(1) Combination of Initial and Final Year Cross Section of Countries, and
(2) Annual Rates of Change Within Countries, by Sector of Employment and Sex of Worker

Sector	Sample Size		Men			Women		
			Intercept	LogGNP/A	R^2	Intercept	LogGNP/A	R^2
Agriculture	1	122	.088	.0286	.060	.740	-.0810	.146
			(1.45)	(2.77)		(7.09)	(4.53)	
	2	61	-	.136	.213	-	.278	.150
				(4.10)			(3.26)	
Mining	1	122	.649	.0395	.464	.394	.0678	.584
			(21.7)	(9.94)		(9.92)	(12.4)	
	2	61	-	.025	.021	-	.062	.073
				(1.10)			(2.07)	
Manufacturing	1	122	-.153	.131	.868	-.619	.185	.787
			(4.40)	(28.1)		(9.14)	(20.8)	
	2	61	-	.105	.335	-	.035	.100
				(5.50)			(2.54)	
Utilities	1	122	.821	.0199	.406	.121	.102	.751
			(47.1)	(8.91)		(2.81)	(18.7)	
	2	61	-	.072	.110	-	.192	.075
				(2.67)			(2.16)	
Construction	1	122	.457	.0457	.206	.387	.0542	.280
			(7.27)	(5.58)		(6.18)	(6.82)	
	2	61	-	-.033	.033	-	-.045	.060
				(1.43)			(1.96)	
Commerce	1	122	-.653	.165	.878	-1.067.	.219	.862
			(15.7)	(29.4)		(17.0)	(27.4)	
	2	61	-	.120	.422	-	.127	.310
				(6.62)			(5.19)	
Transportation	1	122	.335	.0681	.497	.535	.0508	.425
			(7.22)	(10.9)		(12.0)	(9.42)	
	2	61	-	.016	.014	-	.003	.001
				(91)			(.23)	
Services	1	122	.503	.0404	.373	.284	.0757	.515
			(13.3)	(8.45)		(5.31)	(11.3)	
	2	61	-	.122	.194	-	.117	.143
				(3.80)			(3.16)	
Nonagriculture	1	122	.0599	.0968	.859	-.348	.147	.817
			(2.25)	(27.1)		(6.96)	(23.1)	
	2	61	-	.076	.282	-	.105	.174
				(4.85)			(3.55)	
Total	1	122	(-.439)	.147	.873	-.487	.154	.670
			(12.6)	(28.7)		(6.93)	(15.6)	
	2	61	-	.188	.511	-	.272	.276

Table 10
Regressions of Sector Fraction of Employment on Income:
(1) Combination of Initial and Final Year Cross Section of Countries, and
(2) Annual Rates of Change Within Countries, by Sex of Worker

Sector	Sample Size		Men			Women		
			Intercept	LogGNP/A	R^2	Intercept	LogGNP/A	R^2
Agriculture	1	122	1.620	-.177	.931	1.846	-.207	.847
			(54.2)	(40.3)		(32.2)	(25.7)	
	2	61	-	-.183	.673	-	.199	.673
				(11.1)			(10.3)	
Mining	1	122	-.0160	.00413	.297	.00157	.00014	.005
			(3.96)	(6.94)		(1.16)	(.71)	
	2	61	-	-.00516	.055	-	.00115	.029
				(1.81)			(1.26)	
Manufacturing	1	122	-.224	.0599	.777	.109	.0384	.444
			(11.2)	(20.4)		(3.89)	(9.78)	
	2	61	-	.0191	.092	-	.00861	.006
				(2.46)			(.59)	
Utilities	1	122	-.0181	.00397	.738	-.0041	.0010	.491
			(12.3)	(18.1)		(6.22)	(10.6)	
	2	61	-	.00104	.017	-	.0001	.000
				(1.01)			(.12)	
Construction	1	122	-.126	.0282	.760	-.0120	.00293	.368
			(12.8)	(19.5)		(4.82)	(8.36)	
	2	61	-	.9347	.363	-	.00946	.578
				(5.85)			(9.07)	
Commerce	1	122	-.0977	.0302	.721	-.195	.0486	.608
			(8.39)	(17.6)		(7.69)	(13.6)	
	2	61	-	.0319	.470	-	.0622	.412
				(7.29)			(6.48)	
Transportation	1	122	-.0534	.0157	.793	-.0448	.00879	.871
			(10.7)	(21.4)		(20.3)	(28.4)	
	2	61	-	(.0187	.536	-	.00735	.386
				(8.33)			(6.14)	
Services	1	122	-.0881	.0356	.665	-.483	.108	.751
			(5.61)	(15.4)		(12.0)	(19.0)	
	2	61	-	.0827	.495	-	.120	.539
				(7.66)			(8.38)	
Nonagriculture	1	122	-.620	.177	.931	-.846	.207	.847
			(20.7)	(40.3)		(14.7)	(25.7)	
	2	61	-	.183	.673	-	.199	.637
				(11.1)			(10.3)	

expected on the basis of the cross country pattern by income, increasing over time one-third as rapidly with income as implied in the cross section. For women there was virtually no growth in employment share in manufacturing within countries whereas the cross section would have led one to expect a substantial gain. Conversely, services grew twice as rapidly within countries as in the cross section for men. Employment of women in services grew more rapidly over time than for men, but this rapid growth is more or less in line with the cross sectional evidence. The income response of the fraction of employment in commerce and transportation is roughly similar in the cross-section and within countries for both men and women.

Kuznets observed that the postwar employment growth in manufacturing was slower and that in services more rapid with respect to income growth of nations than would have been predicted on the basis of past cross country relationships.[19] Kuznets relied on prewar data for the more industrially advanced countries to "forecast" the postwar employment changes for the less developed countries. In this study a more recent comparison of cross sectional and time series patterns is based on the same sample of countries and confirms his earlier findings. The expanding trade in manufactured goods has been ascribed a significant role in the advancement in women's employment, particularly in East Asia.[20] In contrast, my sample of low income countries suggests that the expansion of manufacturing may have lagged, and women's fraction of firm employment in this leading sector has not held its own, or at least has not followed the expanding path that would have been expected on the basis of cross country income comparisons. The puzzle is what has held women back from obtaining a larger share of the wage jobs in manufacturing?

Education and the Distribution of Employment

In several sectors the average level of adult literacy is statistically significantly associated with the share of wage earners, after controlling for income levels (not reported). The levels of education or literacy of women relative to men differ substantially across regions of the contemporary world. But adding literacy or years of education as a regressor to equation (2) does not change appreciably the partial association with income.[21] In cross country and within country estimates, literacy and its change are positively associated with the fraction of wage earners in manufacturing, utilities, construction and services for both men and women, but not in commerce or mining. The share of wage earners in agriculture exhibits an inverse cross sectional relationship with literacy, but within countries over time the share of wage earners is positively related to literacy. For the economy as a whole, the male share of wage earners is unrelated to literacy in the cross-section but is negatively related for women. Increases over time in the aggregate economy's fraction of wage workers are slightly larger for countries in which literacy is increasing more rapidly. In short, human capital appears to complement the firm's economies of scale relative to the family's managerial capacities outside of agriculture, commerce, and mining. This complementary role of literacy in facilitating the dominance of firm production is most clearly reflected in the mix of employment in manufacturing and services.[22] Allowing for this modest effect of education however does not change the previously noted patterns with respect to average income per adult.

VI. Conclusions

This paper describes in a variety of dimensions how the composition of the labor force changes with economic development. One feature of that

composition was emphasized: the proportion of employment within firms as opposed to within families. As suggested earlier, this distinction of job type may capture differences in how labor is compensated and employment determined. Distortions in the labor market caused by monopsonistic power, governmental regulations, and the presence of rents, which occupy a central place in descriptions of the development process,[23] are easier to explain if firms dominate the labor market than if families and individuals are the producing units. If the transition of employment from families to firms follows a relatively narrow path, it may be possible to attribute deviant employment patterns to specific policies that influence the relative competitiveness of firms and families. The share of family and informal labor market employment is expected to be larger, if the cost of labor to firms exceeds that which would equilibrate the labor market as a whole and a fortiori would exceed the opportunity cost of labor to families in such a distorted economy. Firms are at a relative disadvantage compared to families, presumably because they face increased labor costs caused by regulations such as minimum wage legislation, social insurance premiums, limitations on firing and severance pay, etc. Consequently, the minimum wage two sector model predicts that effective minimum wage levels would increase the share of employment provided by families (or the uncovered sector).[24]

As a step toward investigating this question, it has been shown that there are statistically significant relationships between income per adult and the fraction of wage earners (Tables 9 and 10). The relationships within sectors are particularly important for the major sectors of manufacturing and commerce and also clearly evident in services, transportation, and utilities. Thus, there is cross-country and within-country evidence that the fraction of wage earners

changes predictably as does national real income per adult, the exception being women's entry into wage employment in agriculture.

An ancillary issue is whether the relative abundance of human capital in a population, given the national level of income, affects the comparative advantages of the technologies and management capacities of the firm versus the family and how these differ by sector. The effects of education appear to be relatively small, however, and are only summarized in this paper. In agriculture relatively more educated populations rely more heavily on family producers across countries. Conversely, the relative human capital endowment of the population is associated with a greater predominance of firm employment in most other sectors over time.

The decomposition of changes in the fraction of wage earners by sector indicates that intra-sectoral increases in this fraction of firm employment account for most of the rapid growth in the fraction of wage employment of women in Asia and Africa. In Latin America the growth in the fraction of wage earners has been slower than in the other less developed regions, and intrasectoral growth in the fraction of wage earners has contributed relatively less. For women its contribution has even been negative. This regional patten is consistent with there being larger labor market distortions in Latin America than elsewhere, which hinders the expansion of employment by firms and impacts most strongly on women who are paid less than men and thus are more likely excluded from minimum wage regulated employment by firms. The entry of women into the market labor force and particularly into wage employment is noticeably retarded in sectors such as manufacturing which generally absorb more women workers. In South and West Asia, where urban employment growth has been sluggish, women have

been displaced from the labor force, possibly by better educated male workers. Labor market distortions may also have contributed to these regional patterns.

Minimum wage legislation is common across countries, and its effect should depend on its coverage, the extend of enforcement, and on the level of minimum wages relative to the unregulated opportunity cost of labor to the covered sector. Enforcement and coverage are unfortunately difficult to measure. Evidence on the effect of minimum wages on the fraction for wage earners in the economy is quite limited. However, I report evidence elsewhere that the overall labor force participation rate for women, and to lesser degree that for men, decreases in periods when minimum wages increase as a proportion of GNP per adult.[25] More precise estimate of minimum wage effects on the size and composition of labor force are needed across and within countries. Models of labor market distortions, economic growth, and disaggregated labor force participation may eventually be more formally integrated and empirically estimated. It does not seem unreasonable that women are the main group that loses ground due to labor market regulations and distortions in low income countries. But little research has yet tested this proposition. These interventions in the labor market may slow the transition of women from nonmarket and family work to firm employment, with consequences on the rate and structure of economic growth.

Appendix Table A-1

Small Sample of Countries Available for Decomposition Analysis of Employment Type By Economic Sector and Sex Over Time

Country Group/Country	Range of Data		Wage Fraction of Employees			
			Males		Females	
	First Year	Final Year	First Year	Final Year	First Year	Final Year
Eastern Europe						
Bulgaria[a]	1965	1975	.97	.99	.98	1.00
Czechoslovakia[a]	1961	1970	.97	.99	.94	.99
Hungary[a]	1963	1980	.93	.97	.81	.94
Poland[a]	1960	1970	.63	.73	.41	.56
West						
Japan	1955	1980	.54	.76	.33	.64
Australia	1954	1981	.79	.83	.89	.88
New Zealand	1951	1981	.76	.83	.91	.92
Canada	1951	1981	.72	.91	.92	.96
United States	1960	1980	.83	.91	.92	.96
Denmark	1960	1981	.73	.82	.86	.91
Finland	1960	1980	.66	.84	.65	.87
Iceland[a]	1950	1960	.77	.74	.73	.85
Ireland	1951	1981	.54	.73	.71	.92
Norway	1960	1980	.74	.87	.91	.92
Sweden	1960	1980	.80	.90	.91	.95
United Kingdom	1966	1971	.92	.90	.94	.96
Greece	1951	1981	.36	.49	.49	.56
Italy	1961	1981	.68	.76	.69	.80
Malta[a]	1957	1981	.73	.75	.60	.88
Portugal	1960	1981	.72	.76	.87	.79*
Spain	1966	1970	.62	.73	.56	.79
Austria	1951	1981	.69	.87	.54	.85
Belgium	1961	1980	.77	.84	.71	.83
France	1954	1975	.68	.81	.59	.83
West Germany	1959	1980	.81	.87	.70	.85
Luxembourg	1966	1970	.81	.84	.65	.79
Netherlands	1960	1981	.78	.87	.84	.88
Switzerland	1950	1980	.73	.87	.87	.96
Latin America						
Cuba[a]	1953	1970	.70	.86	.88	.99
Dominican Republic	1960	1981	.36	.54	.72	.76
Haiti	1950	1982	.15	.16	.10	.20
Martinique[a]	1961	1967	.76	.77	.82	.84
Puerto Rico[a]	1961	1980	.74	.81	.83	.93
Costa Rica	1963	1973	.64	.72	.88	.93
El Salvador	1961	9880	.68	.63	.72	.55*
Guatemala	1973	1981	.45	.45	.67	.72
Honduras	1974	1977	.41	.46	.64	.65
Mexico	1960	1977	.61	.61	.80	.66*

Country Group/Country	Range of Data		Wage Fraction of Employees			
			Males		Females	
	First Year	Final Year	First Year	Final Year	First Year	Final Year
Nicaragua	1963	1971	.56	.57	.61	.69
Panama	1960	1980	.37	.60	.78	.89
Chile	1960	1982	.75	.58	.78	.66*
Uruguay	1963	1975	.73	.71	.77	.78
Bolivia	1950	1976	.46	.39	.16	.41
Brazil	1960	1980	.42	.63	.51	.76
Ecuador	1950	1982	.44	.49	.85	.64*
Guyana[a]	1946	1965	.64	.73	.66	.67
Paraguay	1972	1982	.36	.38	.52	.46*
Peru	1961	1981	.48	.48	.51	.41*
Venezuela	1961	1981	.57	.65	.75	.78
Africa (North mainly)						
Maritius	1962	1972	.84	.86	.91	.89*
Reunion[a]	1961	1982	.70	.78	.82	.93
Cameroon	1976	1982	.22	.22	.03	.03
Algeria	1966	1977	.67	.71	.74	.96
Egypt	1960	1976	.50	.64	.59	.83
Libya	1964	1973	.55	.61	.36	.58
Tunisia	1956	1975	.44	.66	.06	.43
Botswana[a]	1694	1981	.14	.50	.04	.35
East Asia						
Hong Kong	1958	1981	.65	.87	.62	.93
South Korea	1960	1980	.25	.47	.16	.37
Indonesia	1965	1978	.27	.40	.29	.36
Philippines	1960	1978	.27	.41	.35	.41
Singapore	1957	1980	.74	.79	.74	.90
Thailand	1954	1980	.10	.26	.02	.17
South and West Asia						
Bangladesh	1961	1974	.43	.30	.30	.19*
India	1961	1971	.47	.57	.26	.53
Iran	1956	1976	.45	.55	.58	.47*
Nepal	1961	1976	.20	.15	.10	.07*
Pakistan	1951	1981	.16	.26	.15	.38
Sri Lanka	1963	1981	.59	.59	.84	.79*
Bahrain[a]	1971	1981	.80	.89	.96	.99
Kuwait	1965	1980	.83	.88	.97	1.00
Syrian Arab Republic	1960	1970	.52	.44	.53	.40*
United Arab Emirates[a]	1975	1980	.90	.93	.97	.99
Cyprus	1976	1982	.62	.65	.59	.61
Israel	1972	1976	.77	.73	.84	.81*
Turkey	1975	1980	.36	.45	.09	.14

[a]Excluded from decompositions because regression sample required real GNP figures, which were not available. Thus of the 75 countries listed only 61 are used in theis paper.
*Female participation rate decreased over interval.

DATA APPENDIX

Data on the composition of labor force were drawn from an ILO data tape prepared on November 12, 1985 in Geneva, which parellels the figures published in the ILO Yearbook of Labour Statistics up to 1984. Several additional countries and observations were added, or ILO data tape figures were corrected if inconsistencies emerged. Countries were included if they reported figures similar to those in Table 2 of the Yearbook which cross tabulates the labor force by sex, industry, and job status (i.e.: employer or own account, wage and salary, family worker, and other--inclusive of unemployed). Seventy-five countries provided this detail for at least two years. The final working sample of 61 countries is a subset of these for which real GNP per adult was available from World Bank sources. this sample and the initial and final year of the observation is listed in Appendix Table A-1. Missing figures could arise for a certain sector because no workers are employed, say of women in mining, or it is more likely that given the size of the labor force sample and small population in cell, the mean is not reported because of sampling variability. In a number of other instances, a small sector, such as mining or electricity (utilities) is combined with manufacturing in one year and disaggregated in another year. In these cases the same aggregation is retained for both years at the cost of eliminated, for that country, the smaller sector (see footnote 10).

International standard industrial sector codes (ISIC) were adopted in 1958 and revised again in 1968. The important distinction added in 1968 is between personal and business services, which could not be retained here in order to include the earlier observations. For this study business and personal services are thus combined. In either the 1958 or 1968 schema the residual category is not homogeneous across countries, containing persons not able to answer the

question in some countries and unemployed new entrants to the labor force in many countries. The wage and salary fraction of employment is based on only those members in the labor force who report a specified industry and one of the three primary job types (employer-employee, own account-self employed, and family worker). The other or not specified elsewhere residual groups are thus omitted from all calculations and weighted comparisons across countries as noted in the text. See also footnote 10.

Notes

1. R. Layard and J. Mincer, "Trends in Women's Work, Education, and Family Building," Journal of Labor Economics 3:1 part 2 (January 1985); T. Paul Schultz, "The Value and Allocation of Time in High Income Countries: Implications for Fertility," Population and Development Review, Vol. 12, Supplement (1986).

2. O.E. Williamson, The Economic Institutions of capitalism: Firms, Markets Relational Contracting, (New York: Free press, 1985); Y. Ben-Porath, "The F connection," Population and Development Review, 6:1 (March) 1-30 (1980); R. A. Pollack, "A Transaction Cost Approach to Families and Households," Journal of Economic Literature, 22:2 (June) 1985; T. P. Schultz, "La Empresa, el empleo familiar, su dessarrollo y salarios minimos" (Firm and Family Employment: Development and Minimum Wages). Estudios de Economia, 15:1 (April) 1988, 85-125.

3. E. Boserup, Women's Role in Economic Development (London: George Allen and Unwin, 1970); R. L. Blumberg, "A General Theory of Gender Stratification," Sociological Theory 1984, pp. 23-101 (San Francisco: Jossey Bass, 1984).

4. Colin Clark expressed the view that economic progress involved a redistribution of the labor force from primary and secondary or manufacturing activity to tertiary or service industries. See The Conditions of Economic Progress, London: Macmillan, 1940. Exceptions to this pattern are noted where it was believed that the distribution of goods absorbs an unusually large share of national resources, as in some West African countries. Se P.T.

Bauer and B.S. Yamey "Economic Progress and Occupational Distribution," Economic Journal 61, December, 1951. This exception is explained by three arguments. First, the occupational or industry of employment data is inadequate because it assigns individuals to one category, when they may actually be engaged in many, due to imperfect market specialization. Second, the shift between unpaid family production and paid activities can be misleading, and is not measured comparably across countries or over time. These intrinsic problems with interpretations of industry and job-type data across countries have hardly diminished with four decades of data improvements, and should be kept in mind as a serious limitation to the precision of analyses such as are reported in this paper. Bauer and Yamey also dispute Clark's presumption that the income elasticity of consumer demand for manufactured goods exceeds those for primary goods, and that the income elasticity of demand for services also exceeds those for manufactured goods. Subsequent intercountry comparisons by Simon Kuznets and others have given general support to Clark's patterns, but also note the anomalous size and growth of the service sector in many low income countries in the postwar period. Se "Quantitative Aspects of the Economic Growth of Nations: II, Industrial Distribution of National Product and Labor Force," Economic Development and Cultural Change 5 (Supplement) (1957) and Economic Growth of Nations (Cambridge, MA: Harvard University Pres, 1971); A.S. Oberai, Changes in the Structure of Employment with Economic Development, Geneva, Switzerland: ILO, T. P. Schultz (Note 2).

5. Boserup (see Note 3); J. D. Durand, The Labor Force in Economic Development (Princeton, NJ: Princeton University Press, 1975); N. Folbre,

"The Unproductive Housewife': Her Evolution in the 19th Century Economic Thought," mimeo, (University of Massachusetts (May) 1988).

6. I.M.D. Little, "Small Manufacturing Enterprises in Developing Countries," The World Bank Economic Review 1:2 (January, 1987) 203-236; A. Portes and L. Benton, "Industrial Development and Labor Absorption," Population and Development Review, 10:4 (December, 1984) 589-612; D. Mazumdar, "The Urban Informal Sector," Working paper 211, (Washington, DC: The World Bank, 1975). See also note 4.

7. The World Bank data base was used for GNP and population structure (an updated version of World Bank Tables) and ILO data file (a machine readable version of the Yearbook of Labour Statistics. 1969-71 average foreign exchange rates are used to convert local constant price GNP series into 1970 dollar figures. Recourse to census publications were required in several cases where ILO figures were inadequately reported or wrong, e.g. Switzerland 1950, Pakistan 1971, and India 1971.

8. J.N. Sinha, "Comparability of 1961 and 1951 Census Economic Data," Artha Vijnana (December 1964) and Durand. More recent data from Labor Force Surveys in Pakistan, India, and Bangladesh suggest a growing role for women in wage employment in come sectors. Until parallel data from the Population Census become available, these trends could not be evaluated here, but will be the focus of additional analysis.

9. Boserup and Durand (See Notes 3 and 5).

10. Sectoral disaggregations of the labor force present some problems

of comparability. For example, data for Sweden on mining in 1950 is missing, so the within country comparisons for Sweden start with 1960. Some countries were dropped entirely because aggregations changed repeatedly as in Yugoslavia. The following adjustments of the data were made: Brazil aggregated mining, manufacturing, and utilities in 1980 and this aggregation was retained in 1960. Japan aggregated utilities and transportation in 1955 and this was preserved as the aggregate for transportation in 1980. Hong Kong reported mining and manufacturing together in 1958 which is continued in 1981. Pakistan aggregated utilities and construction in 1951 which was preserved 1981 and called construction. Mining and manufacturing and aggregated in Denmark in 1955 and this pattern was preserved thereafter. Iceland aggregates mining and manufacturing consistently in 1950 and 1960 as did Israel in 1972 and 1976. Luxembourg omits data on the separate sector of mining in 1970; mining is thus also aggregated with manufacturing in 1966 to preserve consistency in the accounts. These adjustments are responsible in part for the relatively low aggregate employment figures for mining, i.e. some miners are counted in manufacturing, etc.

11. A quadratic term in log income also helps to explain W_j across countries and the improved fit is statistically significant at the 5 percent level for the entire nonagricultural labor force, manufacturing, and construction. The linear term generally received a positive coefficient and the quadratic a negative one. The within sector changes in W_j over time are also correlated with the quadratic term in income changes, being statistically significant for manufacturing, mining, utilities, transportation, services, and construction, and again for the entire nonagricultural labor force. To

save space only the linear approximation is reported here. See statistical issues C. Hsiao, Analysis of Panel Data (Cambridge: Cambridge University Press, 1986).

12. Other measures of development, such as per capita GNP, implicitly assign great weight to the age composition of the population. Real GNP per adult is designed to approximate average labor productivity.

13. Short-run fluctuations in policy, business cycles, trade imbalances and related austerity programs, as well as weather, may add transitory variation to the secular trends in the composition of the labor force. Because the former short-run factors are unavoidably neglected in this initial investigation of variation in the share of wage earners, it seemed advisable to focus analysis on the within country average rate of change over the longest observed interval.

14. Heteroskedasticity can also arise because the dependent variable is limited, and must fall in the unit interval. For example, when the share of wage earners in utilities is .98 in country A and .80 in country B, the error associated with these observations is likely to be smaller in country A than B, holding size of sector constant. A standard method for dealing with this type of limited variation in shares or probabilities is to estimate a logistic (or probit) model. The alternative logit specification did not reduce significantly the underlying evidence of heteroskedasticity in the residuals. Future work may prefer to ignore the population size weights used here, and exploit the covariance matrix two-state consistent estimator proposed by White to adjust the standard errors. (Kmenta, J. (1981) Elements

of Econometrics, New York: Macmillan Co; White, H. (1980) "A Specification Consistent Covariance Matrix and a Direct Test for Heteroskedasticity," Econometrica, 48:3 (May), 817-838.

15. S. Kuznets, Modern Economic Growth: Rate Structure and Spread (New Haven, CT: Yale University Pres, 1966).

16. Boserup conjectured this (see Note 3).

17. Durand (see Note 5).

18. S. Joekes, Women in the World Economy (New York: Oxford University Press, 1987); A. Jaffe and K. Azumi, "The Birthrate and Cottage Industries in Underdeveloped Countries," Economic Development and Cultural Change, 9:1, pt. 1 (October, 1960) 52-63; Layard and Mincer (Note 1). Even the balance of male employment has shifted from families toward firms more rapidly than would have been forecast from cross sectional evidence alone. However, this is entirely due to the more rapid than expected increase in wage employment within agriculture. Note the share of wage earners in nonagriculture increased with income more slowly within countries than it did across countries, both for men and women. the nonagricultural sector is a disparate mixture of more rapid growth of wage employment in services and less rapid growth of wage employment in commerce and manufacturing than would be expected on the basis of income gains and the past gross sectional association with income levels.

19. S. Kuznets, Economic Growth of Nations.

20. Joekes (Note 18).

21. Adult literacy is available for all 61 countries for which GNP and labor force composition statistics could be obtained for two or more periods. Average years of education completed by adults (age 20-44) may be for some purposes a better measure of labor market skills. But even after considerable effort, an underlying census or survey tabulations needed to estimate years of education was located for only about half of the sample of countries reporting labor force statistics at two points in time (Appendix Table A-1). Estimates of years of schooling are calculated by the author for all national populations tabulated by age and sex an completed education as reported in various UN Demographic Yearbooks.

22. Data are not generally available by sector on the literacy or education of workers. Where years of education for all adults and literacy were estimated, both measures were similarly related to the balance of firm and family employment. Adult literacy is also occasionally related to the sectoral composition of employment holding constant log income per adult. But the direction of the association with education often changes between the cross section and time series. The share of employment in agriculture is lower for more literate countries in the cross-section but higher over time (and by definition the converse holds for the share of nonagricultural employment). The share of manufacturing employment is not related to literacy, while the share of services is lower for more literate populations while the share of employment in commerce is smaller for women in more literate societies in the cross section.

23. A.O. Krueger, "The Political Economy of Rent Seeking Society," American Economic Review, 64:3 (June, 1974) 29-303.

24. J. Mincer "Unemployment Effects of Minimum Wages," Journal of Political Economy, 84:4, part. 2 (1976); See also G. Starr, Minimum Wage Fixing. Geneva, Switzerland: ILO, 1981; S. Rottenberg, The Economics of Minimum Wages, Washington, DC: American Enterprise Institute, 1981. Simon Rotten berg observed that "the price of self-employed labor can be lower than the price of waged employed labor," due to minimum wage legislation, trade unions, or community conscience, with the consequence that "it will frequently be worth while to hire, in self-employed ways, persons who will not be hired for wages." See "note on Economic Progress and Occupation Distribution," Review of Economics and Statistics, 1953, pp. 168-170. Thus, Rottenberg explains why the service sector (i.e. self-employed) is relatively larger in low income countries than expected on the basis of Clark's empirical generalizations (See Note 4).

25. T. P. Schultz (Note 2.)

References

Ben-Porath, Y. (1980) "The F Connection," Population and Development Review, 6:1 (March) 1-30.

_____ (1986) "Self-Employment and Wage Earners in Israel" in Studies in the Population of Israel, Vol. 30 (ed.) U.O. Schmelz, Hebrew University, Magnes Press.

Blumber, R.L. (1984). "A General Theory of Gender Stratificaiton," in Sociological Theory 1984, pp. 223-101, San Francisco, CA: Jossey Bass.

Boserup, E. (1970) Women's Role in Economic Development, George Allen and Unwin: London.

Durand, J.D. (1975), The Labor Force in Economic Development, Princeton, NJ: Princeton University Press.

Folbre, N., 1988. The unproductive housewife: Her evolution in the 19th century economic thought. Mimeo, University of Massachusets (May).

Hsiao, C. (1986), Analysis of Panel Data, Cambridge: Cambridge University Press.

Jaff, A. and K. Azumi (1960), "The Birthrate and cottage Industries in Underdeveloped Countries," Economic Development and Cultural Change 9:1, part 1 (October) 52-63.

Joekes, S. (1987). Women in the World Economy, New York: Oxford University Press.

Kmenta, J. (1981). Elements of Econometrics, New York: Macmillan Co.

Krueger, A.O. (1974) "The Political Economy of Rent Seeking Society," American Economic Review, 64:3 (June) 29-303.

_____ (1987), "The Relationship between Trade, Employment, and Development" in The State of Development Economics, (eds.) G. Ranis and T.P. Schultz, London: Basil Blackwell.

Kuznets, S. (1957), "Quantitative Aspects of Economic Growth of Naitons: II, Industrial Distribution of National Product and Labor Force," Economic Development and Cultural Change 5 (Supplement).

_____ (1966) Modern Economic Growth: Rate Structure and Spread, New Haven, CT: Yale University Press.

_____ (1971) Economic Growth of Nations, Cambridge, MA: Harvard University Press.

Kynch, J. and A. Sen (1983), "Indian Women: Well Being and Survival," Cambridge Journal of Economics, 7, 363-380.

Layard, R. and J. Mincer (1985) "Trends in Women's Work, Education, and Family Building," Journal of Labor Economics, 3:1, part 2 (January).

Little, I.M.D. (1987) "Small Manufacturing Enterprises in Developing Countries," The World Bank Economic Review 1:2 (January) 203-236.

Mazumdar, D. (1975), "The Urban Informal Sector," Working paper 211, Washington, DC: The World Bank.

Mincer, J. (1976) "Unemployment Effects of Minimum Wages," Journal of Political Economy, 84:4, part. 2.

Oberai, A.S. (1978) Changes in the Structure of Employment with Economic Development, Geneva: International Labor Office.

Pollak, R.A. (1985) "A Transaction Cost Approach to Families and Households," Journal of Economic LIterature, 22:2 (June).

Portes, A. and L. Benton (1984) "Industrial Development and Labor Absorption," Population and Development Review, 10:4 (December) 589-612.

Rottenberg, S. (1981), (ed.) The Economics of Legal Minimum Wages, Washington, DC: American Enterprise Institute for Policy Research.

Schultz, T.P. (1986), "The Value and Allocation of Time in High Income Countries: Implications for Fertility," Population and Development Review, Vol. 12, Supplement.

_____ (1987), "Firm and Family Employment: Development and Minimum Wages" (mimeo) New Haven, Yale University, in Estudios de Economia, 15:1 (April) 1988, 85-125.

Sinha, J.N. (1964), "Comparability of 1961 and 1951 Census Economic Data," Artha Vijnana (December).

Starr, G. (1981), Minimum Wage Fixing, Geneva, Switzerland: ILO

White, H. (1980), "A Specification Consistent Covariance Matrix and a Dirct Test for Heteroskedasticity." Econometrica, 48:3 (May), 817-838.

Williamson, O.E. (1985) The Economic Institutions of Capitalism: Firms Markets, Relational Contracting, New York: Free Press.

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